Politics & Policy

Green Energy Solutions Start at Factory Gates

Encouraging manufacturers to invest in hydro power and other carbon-neutral generation methods could go a long way toward lowering greenhouse-gas emissions.

By Ellen R. Wald
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One way to tackle emissions? Help manufacturers take power into their own hands. *Photographer: Mira Oberman/AFP via Getty Images*

The effort to reduce harmful global greenhouse-gas emissions involves the tricky challenge of addressing the environmental dangers embedded in the status quo without adding undue costs and burdens that could stifle economic growth. This provides strong incentive for investors and policy makers who care about the environment and the economy to prioritize innovative solutions.

In the U.S., the industrial sector accounted for almost a quarter of all emissions in 2019, according to Environmental Protection Agency data, so solving these companies' emissions issues would go a long way toward addressing larger concerns. One fresh way to tackle the problem is to encourage manufacturers to invest in localized, carbon-neutral power generation. This isn't a completely new idea, but it holds promise -particularly now as President Joe Biden wrangles with Congress over his sweeping infrastructure plan, which includes the goals of revitalizing manufacturing and transforming power generation to eliminate harmful emissions.

In the industrialized world, the simplest way to power a factory or server farm is to rely on the local electricity grid. However, this can be harmful when it comes to emissions. International Energy Agency data show that some two-thirds of global electricity was generated by burning fossil fuels in 2018. In China, the continued addition of new coal power plants is one reason it now emits more greenhouse gas than every other developed nation combined. And factories and other ener y-intensive facilities such as server farms are responsible for large amounts of these emissions.

How can localized power generation solve this problem? Let's look at a case study involving aluminum giant EN+ Group International PJSC. Aluminum production is one of the seven most energy-intensive industries and one of the most challenging to reduce emissions. Aluminum is also important in the transition to a more sustainable economy because it is a lightweight, durable and recyclable metal that is used in construction, aerospace, packaging and transportation. Unfortunately, most aluminum producers today rely on coal-fired power plants for electricity.

EN+ was able to cut its greenhouse-gas emissions by 85%, in part by investing in its own power generation assets to ensure that its aluminum was produced with renewable energy. In this case, the company's aluminum smelters rely mostly on designated hydroelectric power stations that also provide electricity to the surrounding communities. The result: The company's aluminum smelter emissions are one sixth of those from a standard Chinese aluminum smelter that uses coal for power.

With hydro power, EN+ found a solution from the past to a very modern problem. Just as textile mills and other factories dotted major rivers in New England and Britain after the industrial revolution, so should modern industry again harness the natural power of flowing water to produce the world's products.

Other forms of zero-carbon energy provide ample and stable sources of energy for manufacturing away from rivers. Synthos, a European chemicals manufacturer, is pursuing the construction of a dedicated 300-megawatt nuclear power plant for its operations in Poland. The company has conducted feasibility studies with GE Hitachi Nuclear Energy and has initiated discussions with Poland's National Atomic Energy Agency. Such a commitment would be especially useful in Poland, which has a grid that relies largely on the burning of fossil fuels. Such a small nuclear power plant, called a small modular reactor (SMR), could cost $1 billion – not cheap, but a fraction of the cost of a full-size nuclear plant.

Investing in localized and designated carbon-neutral power can be a fiscal plus for the companies in addition to a benefit for the environment. Businesses would cut utility costs and could even generate revenue selling excess energy to the grid. Second, they would have a consistent and unwavering source of zero-carbon energy, thus reducing the carbon-intensity of their products. For manufacturers of steel, iron, chemicals and other energy intensive products, this could become an economic necessity as more countries charge carbon adjustment taxes on imported goods.

Some technology firms have taken a different tack, investing in renewable energy power generation to counteract greenhouse-gas emissions from their server farms. These investments, though, have been far less promising from an emissions standpoint. Some have invested in solar and wind farms, sometimes in far-away locations, to offset their own emissions or contribute to the power they need. However, that does not actually cut emissions, it only adds carbon-neutral power to the total consumption. Moreover, at night or when the wind does not blow, these server farms must pull electricity from the same polluting sources as everyone else.

A better way to tackle emissions may be to help companies take power solutions into their own hands with localized and designated carbon-neutral sourcing such as hydropower and nuclear, where feasible. These endeavors would be efficient, cost-effective and realistic steps toward "modernizing power generation," as the White House has pledged to do. At the very least, their potential for helping to reduce global emissions makes them worthy of being part of the debate.

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